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THE SPAN OF VISION IN READING AND THE LEGIBILITY OF LETTERS

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Communicated by Prof. W. B. PILLSBURY

SUMMARY

1. The span of distinct vision for letters in 10 point type at a distance of 35 cm. from the eyes was found to be from 20 mm. to 22 mm. on either side of the fixation point. It has been shown by other investigators that the distance between fixations varies from 10 mm. to 20 mm. It would seem, therefore, that in ordinary reading all the letters read must come within the field of distinct vision, and that probably the fields of distinct vision overlap in successive fixations.

2. Broad letters were the most legible. Narrow letters and some of the tall ones were found near the end of the series. Confusion between letters was apt to take a definite direction, *e. g.*, f was judged t more often than t was judged f.

3. The results of these experiments are in accord with Dor's tests of the acuity of peripheral vision by means of dots.

The problem of this experiment was the determination of the width of the field of distinct vision for each letter of the alphabet. The first part of the problem, the width of the field, was suggested by the work done by other investigators on the fixation pauses in reading. The second phase of the problem, the relative legibility of the letters of the alphabet, was a natural outgrowth of the first. It was thought that it might be interesting to determine, if possible, whether some of the letters might not be worthy of some change in order to facilitate reading.

It has been found by Dearborn (1), Huey (3) and others that in ordinary reading the eye does not pass evenly along the line, but by jerks and pauses. It was computed by Erdmann and Dodge (2) that12/13 to 23/24 of the time is spent at the fixations and they argued on the basis of measurements by Dodge of the angular velocity of the eye movements that, if the rate held good for reading, it did not permit of eye perception during the interval. The work of both Dearborn and Huey on the speed of eye movement confirms the results of Dodge on this point. Dearborn also found by the photographic method the average number of fixations for four subjects to be about 6.1 for a line 96.5 mm. long. Huey's experiment with a bristle attached to the eye by means of the eye cup gave for a line 98 mm. long an average of 4.8 fixations for one subject and 4.5 for the other.

These results were the principal factors in suggesting our problem. Is it possible for all the line to be perceived, or must a part be filled in from the context? To determine this, isolated letters were used. While this method does not prove that all the line between two fixation points is assimilated, it will show whether all is within the field of distinct vision.

The letters, 10 point Roman, old style, were arranged upon cards, one on either side of the fixation point. The method made certain that the central point would be fixated, *not* the letters. Two letters did not seem too complex, and at the same time they allowed for the securing of twice the number of results. The method of placing the letters on the cards presented a problem. At first the letters were cut from a current magazine and pasted on the cards. The difficulty with this was that the shadows about the letters often confused the subject. We finally hit upon the plan of printing the cards with steel type and a small hand press. This was a long, tedious process, as every card differed from every other either in the letters combined or in the distance between them, but the result made the work worth while. The distance between the letters ranged from 10 mm. to 80 mm. The distance increased by steps of 2.5 mm.

The cards were exposed in the Dodge mirror tachistoscope. This consists of a box with two apertures and mirrors so arranged

that the light admitted through one aperture is reflected by a mirror to the fixation point, and thence it is reflected to a transparent mirror set at an angle of 45°. Though a part of the rays pass through the transparent mirror, the other part is reflected to the eye of the observer. Through the other aperture the light is similarly reflected to the eye. This time the rays passing through the transparent mirror reach the eye. In this way a fixation point is obtained which is the same distance from the eye as is the card containing the letters. A Cattell fall chronoscope was placed between the source of light and the aperture leading to the letters. The other aperture was left open. For a part of the work a one hundred candle power electric bulb was used, but it was found that during the summer months sunlight reflected by means of a heliostat was more satisfactory, as it gave a light on the cards more nearly equal to the diffuse daylight that is used for ordinary reading. The cards appeared 35 cm. from the eyes. They were exposed for 59σ, which while it may seem longer than necessary, is short enough to make eye movements during the exposure impossible. However, the time of actual exposure might be considered less than 59σ for when the shutter first begins to fall, the amount of light is not sufficient to make the letters legible even at the fixation point; the full intensity of illumination of the letters is not obtained until the aperture in the shutter coincides exactly with the aperture in the tachistoscope.

The subjects used in this experiment were university men with normal vision, with the exception that P. was astigmatic (.375 D. and .50 D.) and did not always wear glasses. Generally the cards were arranged in series according to the distances between the letters, but occasionally they were given in mixed order. As this seemed to cause no variation in the results the series were considered reliable and more convenient. Over five hundred cards were used, and, as the order was changed for each day's work, there was no possibility of becoming familiar with a series. For fear of this possibility the results were compared each day but there was no change that would indicate increased adaptation of any kind. For the three subjects used over 15,000 expos-

ures were made, exclusive of those that were for any reason considered unreliable. As there were two letters on each card, and these were used separately, there were really over 30,000 results obtained.

TABLE I

Letters	W					P					D				
	Distinct vision		Limen of legibility		Letters confused	Distinct vision		Limen legibility		Letters confused	Distinct vision		Limen legibility		Letters confused
	Left	Right	Left	Right		Left	Right	Left	Right		Left	Right	Left	Right	
a	15	15	22.5	30	u s	20	20	25	22.5	a n u s	15	22.5	22.5	32.5	n u
b	20	30	27.5	40	h u	25	20	32.5	25	h k	17.5	27.5	25	35	h
c	17.5	17.5	27.5	30	e o	17.5	17.5	20	25	e o g	12.5	15	20	22.5	e o n
d	32.5	35	37.5	40		30	30	35	37.5	n	30	25	37.5	35	
e	12.5	17.5	17.5	20	c s g	12.5	17.5	20	22.5	o c s	15	12.5	20	17.5	o c g
f	7.5	10	15	12.5	l t i j	15	15	22.5	20	i t l	20	10	25	15	l t
g	32.5	20	37.5	35	s	27.5	20	30	25	z	25	17.5	27.5	27.5	s
h	10	17.5	15	27.5	b n k	12.5	22.5	15	27.5	b k	15	17.5	20	25	b
i	15	7.5	20	15	j f l t	12.5	17.5	17.5	22.5	j t l	20	20	25	25	j
j	12.5	17.5	20	37.5	i l	12.5	17.5	17.5	22.5	l i	27.5	15	32.5	25	i l
k	25	35	40	40	h t	32.5	27.5	37.5	32.5	g x	25	32.5	35	37.5	
l	15	12.5	20	17.5	j f t	7.5	17.5	12.5	22.5	i j t	15	20	25	25	f j
m	35	32.5	37.5	40		37.5	35	40	40	n	30	35	37.5	40	
n	12.5	12.5	17.5	17.5	m u	20	17.5	27.5	25	a u m	15	17.5	20	25	u m
o	32.5	32.5	35	40	n c	25	25	32.5	32.5	p n	25	20	32.5	27.5	n a
p	32.5	32.5	35	37.5	q m	22.5	20	35	25	m n	25	27.5	30	37.5	o
q	32.5	20	35	37.5	o	22.5	20	27.5	27.5	n o	22.5	20	27.5	32.5	
r	32.5	20	35	35	t	20	27.5	25	32.5	f	22.5	20	30	27.5	t f
s	15	20	22.5	35	g	25	20	27.5	22.5	e g	17.5	17.5	22.5	25	a g
t	12.5	20	17.5	25	r f	30	22.5	37.5	27.5	f l	17.5	20	22.5	25	f
u	15	20	22.5	35	n a	10	10	20	20	m n	17.5	17.5	22.5	25	n
v	15	20	20	30	y w	20	25	27.5	30	y	15	22.5	20	30	u
w	30	35	32.5	40	v	40	25	40	35	v	27.5	25	32.5	37.5	
x	25	35	32.5	40	y v	20	30	25	35	w y	20	17.5	27.5	30	a v
y	20	25	32.5	37.5	v	22.5	32.5	30	37.5	v	17.5	17.5	30	30	v
z	15	20	27.5	35	x g	22.5	30	27.5	32.5	x s t	20	17.5	25	25	g a

The results for the letters on both sides of the fixation point are given in Table I. As the object was to test the span of vision in normal reading, both eyes were always used. The limen of distinct vision was taken to be at that point where the letters

were judged incorrectly 10 per cent of the time and 50 per cent of wrong cases were assumed to give the limen of legibility. The subject always reported cases that seemed doubtful and all cases that were indistinct or blurred. The latter were always discarded as probably due to a lack of accommodation. Doubtful cases were not counted, for or against, unless it was uncertain just where the limen should be. In such cases the number of correct doubtful judgments was compared with the number of incorrect doubtful judgments. In the last column for each subject are given the letters most frequently confused with the given letter.

The average limen of clear vision for all letters on both sides of the fixation point for W. was 21.5 mm. with a mean variation of 7.3 mm.; for P. the limen was 22 mm. with a mean variation of 5 mm.; and for D. the limen was 20.3 mm. with a mean variation of 5 mm. This large variation is what might be expected from the great dissimilarity between the different letters of the alphabet but a large variation might be shown with each letter from day to day. Each subject had his peculiarities; W. was inclined to work harder when he thought he was not getting correct results and to be less attentive when he thought the letters were more distinct. The result was that when he was most confident, he frequently made mistakes. P. was apt to be predisposed in favor of certain letters, which he often reported for letters decidedly unlike. His favorites were m and n. These were often given for a, d, o, p, t, and x in addition to being interchanged with each other, m being more frequent.

The most recent work of this kind with which these results may be compared is that of Ruediger (5). Unfortunately for the comparison his work covers a much broader field, in which a large number of subjects are tested. Consequently, the time devoted to any particular phase of his subject has been minimized. The small letters n and u were used in testing the field of distinct vision, which was only a part of his problem. If we compare his results for ten subjects with these letters with our results for the same letters, we find that for an average of 90.7 per cent. of right cases he gets as a result 25.8 mm. on either side of the fixation point, while for n we get an average of 15.8 mm. on each side and

for u, an average of 17.5 mm. to the left and 20.8 mm. to the right. This is not an exact comparison, for in as much as he used only two letters, there was not the chance of wrong cases that there would have been had he used all the letters of the alphabet. Perhaps it would be more correct to compare his results for 95 per cent. of right cases with our 90 per cent. of right cases. In that case his values would more nearly approach our own.

If we accept our own results as valid, and take Dearborn's and Huey's results on the number of fixations per line, we find that, with a very few exceptions, the distance between fixations lies within the limen of distinct vision. According to Dearborn the greatest distance between fixations was 19.3 mm. and the least was 9.65 mm. Huey found for two subjects that the average distance was 20.4 mm. If we take the sum of the limens of distinct vision for each letter to the left and to the right of the fixation point, only two instances will be found in which the limen is less than the greatest distance between fixations that was found by either of the above observers. The limen for W. in the case of f is 17.5 mm. and for P. in the case of s it is 20 mm. This would seem to indicate that all that is read must come within the field of distinct vision in normal reading. In fact it would seem that the fields of distinct vision for different fixations may overlap.

In Table II is shown the relative legibility of the letters for each subject, both at the limen of distinct vision and at the limen of legibility. It will be seen that the letters not only do not follow the same order for all three subjects, but do not follow the same order at both points for the same subject. It is quite natural that there should be individua' differences of certain forms, though we should hardly expect differences in the same subject. This may be explained partially on the ground that certain letters preserve their identity to a greater degree as we approach the field of indistinct vision than do others. Thus, for example, it would seem that for W. the letter k occupies fourth place in distinct vision and first as we approach the limen of legibility, because its form had certain advantages in indistinct vision that m, d, o, p, w, x, did not have, whatever these advantages may be.

TABLE II.

LIMEN OF DISTINCT VISION.				LIMEN OF LEGIBILITY.		
mm.	W.	P.	D.	W.	P.	D.
40				k	m	
38.7				dm		m
37.5				o	w	
36.2		m		gpqwx	d	dk
35				ry	k	w
33.7	md			b	y	
32.5	opwx	w	m		o	p
31.2				z	sz	
30	k	dk			prtx	boqy
28.7			k	cjsu	vb	jrx
27.5		y	d		agq	ag
26.2	gqr	tz	wp	a	n	
25	b	ox		v		lvz
23.7		gr				istu
22.5	y	bsv	bo		c	hn
21.2		pq	gjqr	th	efh	c
20		a	i		iju	f
18.7		n	atvxz	el		e
17.5	csuvz	ch	lsuy	in	l	
16.2	t		hn			
15	aej	efij	f			
13.7	hl		c e	f		
12.5	n	l				
11.2	i					
10		u				
8.7	f					

Sanford (6) measured the relative legibility of letters by the distance from the eye at which they could be recognized, and also by the time necessary to correctly perceive them. The order of legibility for two subjects working with the small letters from Mind groups as follows:

B.—dpqmyknw ogvxhbjlia tuzrscfe
M.—mqophbnv yudiwkgjrt xaczlfse

While there are some points of agreement, there are some striking points of disagreement between his results and our own. Perhaps the most noteworthy is the letter n, which appears in the first group for both of Sanford's series, but is found nearly the poorest letter in the results in our table. Both are agreed, how-

ever, upon many of the letters. The broad letters seem the most effective, while the short letters and some of the tall letters are found near the end of the series.

Though some letters were quite frequently confused, this confusion was apt to take a definite direction with our subjects. Such letters as t and f, for example, were quite frequently confused, but f was more apt to be judged as t than t as f. The same was true of c and e in a less degree. Just what changes it might be profitable to make where such confusions occur it would be difficult to point out. As Sanford suggests, a slight change that would make certain letters less confusable would be likelyto make others more uncertain.

In conclusion it might be interesting to compare the result obtained with letters with the results obtained with other measurements of peripheral vision. For comparison take the work of Dor (4, p. 348) on the limen of twoness in which he used dots. Snellen (4, p. 353) formulated the equation for visual acuity, $V = \frac{d}{D}$, where D represents the distance at which the letter makes an angle on the retina of 5′ and d represents the distance at which the letter is seen. If we assume this equation to apply to our letters, and consider only the height of the small letters, we find the visual acuity should be approximately 3/10. Of course this would not necessarily be exact, as these letters are not of the same form as the Snellen test type. The letters used were the short letters which were 1.75 mm. high and, as will be remembered, were exposed 35 cm. from the eye. Dor found with dots that 5° from the fovea the acuity of the retina was one-fourth that of the fovea. The visual acuity for our letters at that point, therefore, should be 12/10. In other words they should disappear a little less than 5° from the fovea. The results for some of these short letters are given in Table III.

TABLE III.

	a	c	e	n	x	z
W.	4°18′	4°21′	3°03′	2°52′	5°15′	5°55′
P.	3°52′	3°41′	3°29′	4°20′	4°54′	4°54′
D.	4°29′	3°29′	3°03′	3°41′	4°05′	4°41′

It will be seen that the average is approximately 4° 04′ though some of the letters did not disappear until considerably past 5°. The average, therefore, compares quite favorably with Dor's dots. The difference of the individual letters would have to be explained on the basis of the apperceptive process in the recognition of the letters. Certain general forms are known to belong to particular letters, or groups of letters, or, to put it conversely, certain letters must be grouped as belonging to a certain general form.

Thanks are due Professor Pillsbury for suggesting the problem. I also wish to express my appreciation of the services of Professor Pillsbury and Dr. Woodrow in acting as subjects. Dr. Shepard also offered many suggestions that were of value in working up the results.

BIBLIOGRAPHY

(1). W. F. Dearborn. *The Psychology of Reading.* Archives of Philosophy, Psychology and Scientific Methods, No. 4, 1906.

(2). B. Erdmann and R. Dodge. *Psychologische Untersuchungen über das Lesen.* Halle: Niemeyer, 1898.

(3). E. B. Huey. *The Psychology and Pedagogy of Reading.* New York: The Macmillan Company, 1908.

(4). W. Nagel. *Handbuch der Physiologie des Menschen.* Band III. *Physiologie der Sinne.* Braunschweig: Vieweg, 1905.

(5). W. C. Ruediger. *The Field of Distinct Vision.* Archives of Psychology, No. 5, 1907.

(6). E. C. Sanford. *Relative Legibility of the Small Letters.* American Journal of Psychology, 1: 1887, 402–435.

THE SUBNORMAL CHILD IN NEW YORK CITY SCHOOLS

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From an educational point of view, there are, broadly speaking, two general classes of children, the normal and the abnormal. The normal children, though differing widely among themselves as to capacity, capability and ability, are all capable of meeting with reasonable efficiency the educational standards of the day and cause little or no anxiety to the educationalist. The abnormal children on the contrary are the pedagogic problem of the hour. There are without doubt two kinds of abnormal children, which for convenience we may call the supernormal and the subnormal.

The supernormal children furnish the geniuses, the precocious and exceptionally bright individuals, who never exactly fit into the ordered existence of everyday life, but are always forging ahead of the great mass of humanity, or in other words, the leaders, thinkers, specialists, and great men and women of the world. The subnormal children, in striking contrast, furnish the physical and mental defective problems of the educational world, and in later life are found among the inefficient, parasitic, petty criminal classes, which form the shadows of the great panoramic picture of life. None of the abnormal individuals, then, can be said to be aught but "misfits" in life, and the thoughtful educationalist turns his attention to them, asking "Why are they misfits?" and "Wherein can their fortune be altered?"

Long ago educational theory and practice established a firm working basis for the instruction of the normal child, and for some time pedagogues have been occupied with attempts to embellish method and matter in this field, but latterly they have come to the sound conclusion that, since it is the child and not the curriculum

which must be taught, many departures from the established, customary normal education must not only be tolerated but must also be encouraged. This is especially true for the subnormal child, and special instruction for exceptional, abnormal, atypical, or defective children, has invaded the educational systems of the world to stay. Therefore it behooves those who would be abreast of the times to know what is being done along these lines.

The problems of the subnormal child have been energetically grappled with in many countries, and there is a widespread educational interest in the special instruction of the crippled, the deaf, the blind, the mental defectives or aments, and the physical defectives or anemic, tubercular or adenoid children. Space does not permit the treatment of all these forms of special education; suffice it to say that the problem of the crippled, deaf, blind, and physical defectives is the problem of counteracting deformity, or abnormality of a physical, but not necessarily a psychical character; it involves coöperation between the professions of medicine and pedagogy in a very large degree.

We are chiefly concerned here with the problem of the ament or mental defective, wherein the deformity or abnormality may be, and usually is, largely physical but also psychical in character. This form of problem involves the physician, the pedagogue, and the psychologist.

As early as 1859 Germany began the public school education of mentally deficient children. Institutional care of the idiotic and imbecile was begun several years before almost simultaneously in Germany and France. In 1903, after forty-four years of study and effort, the German educational system was caring for approximately 25 per cent of its aments. Following the Teutonic lead in education seems to be a pedagogic disease and other countries caught this altruistic contagion of educating the ament. In the United States the public school care of these mental defectives began less than twenty years ago and in the city of New York, with which we are principally concerned here, the start was made exactly ten years ago in Manhattan. The results will be discussed in this paper.

As the pioneer, Germany had many experiments to make and

after nearly half a century of experience she has evolved a typical military system in the care of the ament. Special schools for mentally defective children are scattered widely over the German empire today. To these schools children are admitted by the following system: A child who is a laggard in his school work is reported by his teacher at the end of the second year in the same class. Following this report the child is examined by the principal and if in his opinion there is mental cause for this retardation, the child is reported to the principal of a special school. The district superintendent, the principal of the special school, and a physician then make a joint examination of the child and if in their opinion he is a mental defective he is admitted to the special school for a probationary period of three months, at the end of which time he is either (1) returned to his regular school with special directions to his teachers, or (2) admitted to the special school as an educable ament, or (3) transferred to an institution as an imbecile, idiot, or ineducable ament and therefore a menace to the public weal if left at large.

This German method is followed with slight modifications in England also, and in both countries the result is the segregation of the aments and a tendency for the schools to be called "Fool Schools," or some other such euphonious name. The effect is to educate the ament for competition in after life with his peers, but the salient point is herein overlooked, namely that when he leaves these schools he goes forth into a community of his superiors and is unacquainted with their ways and largely incompetent to meet the demands of such a community life. Therefore England and Germany are struggling today with the vital problems of "after-care" for the educated mental defective.

Following the lead of Germany and England public school education of the ament was developed in the United States, but it has developed, at least in New York City, along very different lines. No attempt is made to permanently segregate the aments in special schools, and in every way possible competition with normal children during recesses, in games, etc., is encouraged, in order that the ament may in a measure mature in the midst of the community in which he must later live.

Within our limits it is practically impossible to do more than outline the history of the growth of this special education in the City of New York. The first provision was made in 1899-1900 by the organization in Manhattan of one class for aments and some special classes for "backward children," but for various reasons the progress was slow until 1906-1907 when a department of Ungraded Classes was officially organized by the Board of Education. By carefully gathered statistics it has been estimated that there are approximately 7000 children in the schools of Greater New York City who, as mental defectives, are entitled to the special education of these Ungraded Classes. In 1905 there were 18 classes, caring for 391 children (or about 6 per cent of the total number), established in the city; in 1909 there are approximately 100 classes, caring for over 1700 children (or about 25 per cent of all cases). These facts show what numerical progress has been made since the organization of the department.

The growth of the work in other lines has been of similar character. An inspector of classes was appointed in 1906 as a result of a competitive examination, and the individual so chosen, Miss Elizabeth E. Farrell, had been the successful teacher, since 1899-1900, of the original class for mental defectives. A physician was also appointed to assist in the examination, care, and tabulation of these Ungraded Class children, and the active coöperative work of Miss Farrell and Doctor Isabelle Thompson Smart began in January, 1907, on the basis of the 18 existing classes and the 94 per cent of unexamined or unassigned mentally deficient children in the public school system.

Briefly the mechanics of organizing classes for this department are as follows: At the beginning of each term, i.e., September and February, application forms are forwarded to the principals of the schools (Form A.) on which they are requested to report, to the city superintendent's department, furnishing for each laggard, who in their opinion or that of their teachers is a candidate for the Ungraded Class, the data asked for in the form. Following, as soon as possible, the receipt of these applications the school or district is visited by Dr. Smart, the children, as reported, are examined and the results of each examination recorded on the medical

Form A.

OBSERVATIONS ON CHILD PROPOSED FOR AN UNGRADED CLASS

P. S.....Borough.....

Name..... Address.....

Age..... Grade..... Nationality F..... M.....

Yrs. in U. S..... Home Conditions.....

Health Record: Nutrition..... Bone Dis..... Enl. Gl.....

Teeth..... Throat..... Nose.....Vision R..... L.....

Hearing R..... L..... Nervous Disease.....

School Records: Kn'dg.....terms 1A.....terms 1B.....terms

2 A..... terms 2B..... terms 3A..... terms 3B..... terms

Sp'c'l..... terms. School Att..... Cause of Irreg.....

Absence in last two terms.....Attention.....Memory.....

Oral Exp..... Hand Work..... Phys. Tr..... Number.....

Reading..... Writing..... Sp. Tastes.....

Disposition..... Behavior..... Habits.....

Peculiarities .....

.....

Other Information .....

.....19.... .....

Principal

Form F.

SPECIAL MEDICAL EXAMINATION

P. S. ..... Borough .....

..... 19...

Name .....

1. General Condition .....

A. Anatomical .....

Cranium .....

Facial Asymmetry .....

Palate .....

Teeth .....

Tongue ..... Lips .....

Eyes .....

Ears .....

Limbs .....

Skin .....

Body in General .....

B. Physiological .....

1. Motor Function .....

Tics ..... Tremors .....

Epilepsy ..... Nystagmus .....

Promptness ..... Coördination .....

Prehension R. ..... L. ..... Gait .....

Speech ..... Fatigue .....

2. Sensory Function .....

Eyes R. ..... L. ..... Ears R. ..... L. .....

3. Condition of Heart ..... Pulse .....

C. Psychical .....

Balance ..... Proportion ..... Moral Sense .....

Attention ..... Memory ..... Will .....

Peculiarities .....

D. Development—Att. Diseases .....

E. Family History: Births ..... Miscar ..... Deaths .....

Cause of ..... Diseases F ..... M .....

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Medical Examiner

Recommendation .....

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Inspector Ungraded Classes.

examination blank (Form F.) in duplicate. If in the judgment of Dr. Smart and Miss Farrell, who also examines these candidates on pedagogical lines, a child is considered mentally deficient or elligible for the classes, he is assigned to the nearest Ungraded Class in the district, in which there is a vacancy, or is placed in a new class as quickly as one can be organized and a teacher obtained. In all cases, Dr. Smart makes recommendations, wherever necessary, for medical or surgical treatment, as to eye-glasses, ear defects, care of teeth, throat, etc., recommending treatment for the family physician or suggesting clinics or dispensaries where treatment can be obtained,—and the cases not needing some such care are very rare.

When a child is assigned to and placed in an Ungraded Class his care is individual and minute. Dr. Smart reëxamines all classes once each term, making suggestions for further or neglected treatments and care of the health, and advising or assisting the teachers in all difficult points of hygiene and the physical care of the children. The results of these reëxaminations are recorded in duplicate on forms (Form G.) which like the medical examination forms are filed, one copy in the department office, and one in the class room in charge of the child's teacher. The educational progress is recorded by the teacher four times a year and reported to Miss Farrell on the pedagogical card (Form H.) which is also filed in duplicate, so that in this manner the progress, psychical and physical, can be watched and retrogression prevented or retarded. Miss Farrell also makes regular inspections of the work and examines the progress of the children herself in addition to the report of the teacher.

It is a well known fact that the true ament is incapable of education up to the normal standard. The best that can be hoped is that they may escape in varying degrees from absolute inefficiency. Their psychic processes are at best slow, usually ineffective, and often inaccurate. Many of them can grasp, with difficulty, the concrete facts of life, but abstractions are for them in large measure, an idle and impractical dream of the optimist. Therefore their education must be essentially practical.

The psychology of the mental defective is the psychology of

Form G

MEDICAL RE-EXAMINATION

P.S. ..... Borough .....

..... 19.....

Name .....

General Condition .....

Nutrition .....

1. Motor Function .....

Tics .....

Tremors .....

Epilepsy .....

Nystagmus .....

Promptness .....

Coördination .....

Prehension, R. ..... L. .....

Gait .....

Speech .....

2. Sensory Function .....

Vision, R. ..... L. .....

Hearing, R. ..... L. .....

3. Condition of Heart .....

Pulse .....

Throat .....

Remarks .....

.....

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.....

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Medical Examiner.

Form H

PEDAGOGICAL RECORD

P. S. ..... Borough .....

..... 19 19

Name .....

	Sept. 20	Dec. 20	Mar. 20	June 20	Sept. 20	Dec. 20	Mar. 20	June 20
Sense Training								
Taste								
Smell								
Touch								
Sight								
Hearing								
Physical Train. (imitation)								
Physical Train. (command)								
Writing								
Industrial Training								
Language (oral)								
Language (written)								
Reading								
Arithmetic								
Nature Study								
Personal Habits								
Self Control								
Effort								
Gen'l Information								
Power of Attention								
Power of Memory								
Power of Judgment								
Gen'l Health								
Fatigue								
Attendance								
.....								
.....								

Teacher .....

doing, not the psychology of thinking. An ament, who, after training and practice, may tell accurately how many loads of an accustomed material he will need to haul with his own team, in order to remove a known and accustomed amount of the material, cannot be relied upon for a correct answer if the amounts are changed, and flounders hopelessly if the material is altered though the amounts remain the same. Likewise, the true mental defective, who has with difficulty and by long practice learned to weave well the paper mats of the kindergarten, must often times go through a similarly long and arduous learning process in order to weave the cane seat of a chair or a basket. That is to say, facts or muscular coördinations learned for one definite concrete purpose cannot, by any mental process of the true ament, be transferred to another purpose essentially similar; they must be relearned for the new function.

With such material the teacher of the Ungraded Class must work, and the only possible measure of success is the amount and character of the work which the defective can be taught to do with his hands in the course of one, two, or mayhap six years of individualized training. Taking into consideration the nature of the psychic processes and the requirements for life in the community which the future will demand of the ament, the subject matter included in the curriculum of the Ungraded Classes is eminently practical and aims primarily to make the defective efficient, as far as possible, in some line of industrial work. Therefore beginning with kindergarten methods and materials the Ungraded Class curriculum includes many industrial pursuits, such as mat weaving, basketry, chair caning, sewing, dressmaking, carpentry, brasswork, and the like, beside the essential reading, spelling, writing, etc., of the elementary school subjects, in so far as each pupil can be worked up to them or helped to grasp them.

The teacher who aims to be successful as a teacher of mental defectives must realize first the nature of the mental material with which she has to work, and secondly she must not be discouraged by the meagre results. As a rule among aments it is observed that their reactions to sensory stimuli are weak, lethargic, or absent. This fact is frequently due to dulled, stunted, or untrained sensory

mechanisms, not necessarily actually defective, as is true of the blind, or of the deaf, but more or less functionally atrophied from lack of exercise. In this case the teacher must first awaken the sensory mechanisms, or teach the child to feel, taste, smell, hear and see. For this purpose the teachers of the Ungraded Classes use the kindergarten methods of sense training, but use them to a degree which would be over-use for a normal child. There is little hope of making these dulled senses energetically and eagerly alert but they must be functionally active and, at least, awake.

Given the power to receive, more or less accurately and definitely, the sensory stimuli, or having been taught to receive them by the zeal and skill of a sympathetic teacher, the ament must be trained to respond. It is indisputably true that within limits the accuracy, rapidity, and delicacy of muscular coördinations are a reliable measure of mentality. The ament lacks coördination. Careful, conscientious, painstaking and persistent efforts must be made to teach the child to walk, to stand, to run, to jump, and, having mastered in some degree the coördinations of the heavy muscles and larger, fundamental groups, the coördinations of smaller muscles must be taught with the same care. This is best done: (1) by games and exercises to music—for the ament, strange to say, is fond of music and usually possesses an inate and fairly accurate sense of rhythm; (2) by simple folk dances and gymnastic drills; and (3) by manual work, with a large share of emphasis placed upon the particular form of manual training for which each child shows an aptitude or preference.

Gradually the teacher evolves and develops coördinations between sensory stimuli and their normal muscular responses and the mental defective has gained his seven league boots. With aments, as with normal beings, interest is a great incentive, and it behooves the teacher to study and cater to individual interests. However it must be remembered, else discouragement follow, that this interest, like their attention, is volatile and most difficult to hold. Interest must be constantly renewed for them by varied, vivid, and reanimating stimuli; and for this, the teacher must study the individual child. The senses and the muscles awakened to a modicum of function, the teacher must attend to the training

of the will. This is a most difficult problem, for an ament is always weak or lacking in voluntary power.

Space does not permit a discussion of methods employed, nor is there room for further outline of the individual needs of the child. New York City has adopted the "class system" rather than the "school system," primarily because it is more flexible, easily established—given children and teachers—and secondly is the method most adaptable to the general educational system of the city. The size of each class is limited to fifteen, average attendance, and a class roll of not more than twenty, in order to make possible the salient individual instruction. One or two classes—rarely more—may be established in a school under the same administrative rules as the regular classes of normal children in the same building, and the work of the whole number of ungraded classes is coördinated by the supervisory direction of the inspector of ungraded classes at the head of the special department. The term ungraded class is strictly adhered to for the purpose of avoiding all possible approbrium—the term mental defective being especially avoided—and the classes are considered as special coaching classes from which the child may be returned or promoted to the grades, if capable of being coached up to grade standards. This is necessary, because there are so many grades of amentia and some of the higher types are practically indistinguishable from the worst cases of retardation due to neglect and malnutrition.

It is obvious from a review of the foregoing facts that the teacher for mental defectives is a problem in itself. A good teacher of mental defectives can teach anything under the sun, but not every good teacher can be successful with aments. The work in New York has had one serious handicap since its organization in 1906, which has greatly retarded the rapidity of growth. It was said above that the class system was "easily established—given children and teachers." The children are in evidence in New York. Dr. Smart examined, with untiring energy and enthusiastic zeal, over 1800 new candidates last year beside reëxamining the children in the classes. The teachers are not in evidence, and heretofore all searches for them have resulted only in proving that there is a great scarcity of teachers properly qualified. With the

new school year however (1909-1910), a model class was established in the Brooklyn Training School for Teachers and it is to be hoped that the enthusiasm evoked there will be highly contagious.

Special training for these teachers is essential, for their problems are most difficult and not at all identical with those of the teacher of normal children. For the help of the teachers in the system, regular conferences are held by the department and the teachers are encouraged to take University courses or those offered by the Teachers Associations or in the summer schools, from which they may derive special help. Of the University courses: Teachers College, Columbia, gives a course of one semester from the purely psychological side only; the School of Pedagogy, New York University, gives a course for two semesters from the psychological, hygienic and pathological sides. The Teachers Associations offer special work in manual training, gymnastics, etc., and courses are offered in the summer by New York University, the State Institution at Vineland, N. J., and the University of Pennsylvania. These and similar courses, which may be offered in the near future, afford opportunity to those teachers already fitted for it to gain additional and individual help, but the problem in New York has been to find the teachers already fitted. It is to be hoped that the solution is found and that other Training Schools will take up the problem and do away with the scarcity which has hampered the young and active department of ungraded classes.

THE COURSES IN EDUCATION IN GERMAN UNIVERSITIES

JOHN FRANKLIN BROWN, PH.D.

Teachers College, Columbia University

The following list of lecture courses in education and in related courses (psychology and ethics) are those actually scheduled in the universities of Germany from Easter, 1907, to Easter, 1910.[1] The list is published here, in part for its intrinsic interest, in part because it is so evidently symptomatic of the attitude of German scholars towards the study of education as a university subject.

Inspection of the list will show that in very few of the institutions are the lectures in education given by professors of education, but by professors of philosophy or psychology to whom the work in education has been assigned as a side issue. There is strong opposition among many university professors to the recognition of education as a separate university subject. In the official announcements the lectures in education are listed under the head of philosophy. In the courses offered by one professor there is often alternation between philosophy, ethics, psychology, and pedagogy. One notes with satisfaction this disposition to regard philosophy and psychology as necessary bases for the study of education, but one misses the practical and sociological view-points, which in the United States are also regarded as important.

There is in Germany but one practise school which actually belongs to a university department of education, although in several places the public higher schools are used for purposes of observation. That one, which is almost as well known in the United

[1] The material concerning the first four semesters was collected by W. Donath, a student in the University of Jena, and appeared in the magazine, *Aus dem Pädagogischen Universitäts-Seminar*, edited by Professor William Rein. The writer is under obligation both to Mr. Donath and Professor Rein for the privilege of using this material. The data for the last two semesters have been taken from the official lecture announcements issued by the several universities.

States as in Germany, is presided over by Professor William Rein of Jena. There seems to be no dispostion among the universities to increase the number of these schools. When, for example, the question of extending the work in the study of education came up for consideration by the universities of Munich, Würzburg, and Erlangen less than two years ago, they not only decided against the establishment of practise schools, but they declined to appoint professors of pedagogy. At Erlangen, provision was made for the appointment of a new professor of philosophy who should have authority to give lectures on pedagogy.

Doubtless the work given in these courses is excellent, and the large number of younger men that offer them gives promise for the future; but one feels that, with a few exceptions, the study of education in German universities is somewhat disappointing, and that the universities can be only partially responsible for the development of the good teaching that has made German schools justly famous. The fact is that the teachers in the lower schools—the *Volksschule* and the *Mittelschule*—receive their training in the teachers' seminars or normal schools, and that the teachers in the higher schools have their pedagogical training in the gymnasial seminar,—the last named, by the way, an institution that may well challenge the attention of American educators who are interested in the training of teachers for the high school.

LIST OF COURSES[2]

BERLIN

SS '07 Psychology. *Ach* (d): Introduction to psych. (2)
Ethics. *Riehl*: Ethics I & II (1)
Simmel (a.p.): Ethics (2)
Pedagogy. *Münch*: Ped. theories from Schleiermacher to the present (2)

[2] The rank of the lecturer has been indicated as far as it was possible to determine it from the announcement. If there are no letters after his name he may be assumed to be a full professor (ordentlicher Professor); the letters (a.p.) indicate the rank of associate or assistant professor (ausserordentlicher Professor); the letter (d) indicates private lecturer (privat Dozent). SS '07 indicates summer semester, 1907; WS'07-'08, winter semester, 1907-08. Courses marked with an asterisk (*) are supposed to have been offered in each of the six semesters.

Figures in parentheses following the courses indicate the number of hours per week devoted to the work.

WS '07–'08 Pedagogy. *Paulsen*: Ped. and didactics (4)
Münch: The educational office (2); Ped. conference*
SS '08 Psychology. *Paulsen*: Psych. the foundation of the spiritual sciences (4)
Simmel (a.p.): Outlines of psych. (2)
Stumpf: Psych. institute*
Ethics. *Misch* (d): The principal problems of philosophy with special reference to individual and social ethics (2)
Pedagogy. *Münch*: Theory and art of language instruction (2)

WS '08–'09 Psychology. *Stumpf*: Psych. with demonstrations (4)
Ethics. *Simmel* (a.p.): Ethics and problems in social philosophy (2)
Pedagogy. *Münch*: Ped. theory (2); Scientific ped. exercises (1)

SS '09 Psychology. *Simmel* (a.p.): General psych. (2)
Stumpf: Theoretical exercises in psych. institute (1); Experimental exercises in psych. institute (2)
Vierkandt (d): The soul life of primeval races (3); Exercises in race psych. (1½)
Ethics. *Simmel* (a.p.): Exercises in moral science
Pedagogy. *Münch*: Ped. theories from Plato to Rousseau (2); Scientific ped. exercises (1)

WS '09–'10 Psychology. *Stumpf*: Psych. with demonstrations (4); Theoretical exercises in psych. institute (1)
Stumpf and *Rupp* (d): Psych. institute (5)
Dessoir (a.p.): General psych. (2)
Rupp (d): Experimental exercises in psych. institute (4)
Frischeisen-Köhler (d): The psych. foundations of education (1)
Ethics. *Vierkandt* (d): Ethics (2)
Simmel (a.p.): Kant's ethics (1)
Groethuysen (d): Problems of modern culture (2); The law of nature and the historical school (1)
Pedagogy. *Münch*: The theory of instruction (2): Scientific ped. exercises (2)
Rupp (d): Discussion of exper. ped. in connection with lectures (1)

BONN

SS '07 Psychology. *Erdmann*: Psych. (4)
Herbertz (d): Experimental psych. of sight-perception, especially in reading (1)
Pedagogy. *Wentscher* (a.p.): Ped. (2)

WS '07–'08 Psychology. *Dyroff*: Psych. (4)
Becher (d): Physiological psych. (1); Feeling and will (2)
Pedagogy. *Dyroff*: History of ped. (3)
Jäger: Gymnasial ped. II (2)

SS '08 Psychology. *Erdmann*: Psych. (4)
Ethics. *Becher* (d): Principal problems in ethics (2)
Pedagogy. *Dyroff*: Seminar in Herbart

WS '08-'09 Psychology. *Dyroff*: Psych. (4)
Wentscher (a.p.): General psych. (4)
Erdmann: Exercises in the psych. of speech
Pedagogy. *Erdmann*: History of ped. (3)
Jäger: Gymnasial ped. II (2)

SS '09 Psychology. *Erdmann*: Psych. (4): Exper. psych., exercises in reading (1)
Verweyen (d): Exercises in the psych. of thinking (1)
Pedagogy. *Wentscher* (a.p.): Ped. (2)

WS '09–'10 Psychology. *Dyroffre*: Psych. (4)
Becher (d): The psych. of will (1)
Külpe: Psych. conference (2); Exper. psych. (6)
Ethics. *Hammacher* (d): Exercises in Compte's sociology (1)

BRESLAU

SS '07 Psychology. *Stern* (d): Child psych. and pedagogy (3)

WS '07–'08 Psychology. *Baumgartner*: Psychology (4)
Stern (d): Psychology (4)

SS '08 Psychology. *Stern* (d): Applied psychology (1)
Ethics. *Stern* (d): Introduction to ethics (2)
Pedagogy. *Stern*: (d): History of ped. to the present (2)

WS '08–'09 Psychology. *Stern* (a.p.): Psych. (4): Exercises in child psych. and exper. ped.

SS '09 Psychology. *Baumgartner*: Psychology (4)
Stern (a.p.): Psych. of adolescence and its application to pedagogy (2): Psych. seminar (2)
Ethics. *Kabitz* (d): Fundamental questions of ethics (2); Exercises in Kant's ethical writings ($1\frac{1}{2}$)

WS '09-'10 Psychology. *Stern* (a.p.): Psychology (4); Exercises in the psych. of adolescence in pysch. seminar ($1\frac{1}{2}$)
Pedagogy. *Kabitz* (d): History of pedagogy in modern times (2); Exercises in theoretical pedagogy ($1\frac{1}{2}$)

ERLANGEN

SS '07 Psychology. *Hensel*: Psychology (4)
Pedagogy. *Leser* (d): Prominent educators of modern times and their phil. and ped. views (2)

WS '07–'08 Pedagogy. *Hensel*: Fichte (1)
SS '08 Psychology. *Leser* (d): Psychology (4)
Ethics. *Hensel*: Ethics (2)
Pedagogy. *Leser* (d): Pestalozzi and Herbart (2)

WS '08–'09 Pedagogy. *Leser* (d): Plato (2)

SS '09 Psychology. *Hensel*: Psychology (4)
Pedagogy. *Leser* (d): Views of life of great educators of modern times (2)

WS '09-'10 Pedagogy. *Leser* (a.p.): Pestalozzi and Herbart, an introd. to the problems of ped. (2)

FREIBURG

SS '07 Psychology. *Uebinger*: Psychology (4)

WS '07–'08 Psychology. *Cohn* (a.p.): Psychology (4)
Rickert: Psych. laboratory*
Ethics. *Rickert*: Ethics as social philosophy (1)

SS '08 Psychology. *Uebinger*: Psychology (4)
Pedagogy. *Cohn*: Psych. pedagogy (2)

WS '08–'09 Psychology. *Cohn*: Psychology (4)
Uebinger: The phil. letters of J. E. Erdmann (1)
Pedagogy. *Cohn*: The ends of education and instruction (2)

SS '09 Psychology. *Uebinger*: Psychology (4)
Bumke (d): Physiological psych. (1)
Cohn (a.p.): Psych. essays, by appointment
Pedagogy. *Uebinger*: History of pedagogy (2)

WS '09–'10 Psychology. *Bumke* (d): Physiological psych. (1)
Cohn (a.p.): Psychology, by appointment
Pedagogy. *Cohn* (a.p.): The higher school systems of the present (2)
Supple (d): School hygiene (1)

GIESSEN

SS '07 Psychology. *Groos*: Psychology (4)
Pedagogy. *Siebeck*: Principles of didactics and theory of method in instruction (2)

WS '07–'08 Psychology. *Groos*: Feeling and will in the child (1)
Kinkel: The idea and the life of the human soul

Pedagogy. *Siebeck*: History of education and pedagogy since the Middle Ages (3)

SS '08 Pedagogy. *Groos*: Outlines of pedagogy (2)

WS '08–'09 Psychology. *Groos*: Psychology (9)
Pedagogy. *Siebeck*: Outlines of didactics and methodology of instruction (2)

SS '09 Psychology. *Messer*: (a.p.) Exercises in exper. psych.
Pedagogy. *Siebeck*: History of education and pedagogy since the age of Humanism (3): The nature, origin, and development of speech (2).
Groos: Pestalozzi, in philosophical seminar (1)

WS '09–'10 Psychology. *Messer* (a.p.): Psych. of will (1): Introduction to scientific works in the sphere of psych. and ped. (by appointment)
Ethics. *Weidenbach* (d): Ethics
Pedagogy. *Groos*: Outlines of ped. (2)
Messer (a.p.): Lectures on Natorp's social ped. (1½)

GOETTINGEN

SS '07 Psychology. *Goedeckemeyer*: Psychology (4)
Pedagogy. *Baumann*: History of ped. including curricula and lessons in the higher schools (3)

WS '07–'08 Psychology. *Müller*: Psychology (4)

SS '08 Psychology. *Baumann*: Outlines of ped. psych. (2)
Müller: Memory and the voluntary direction of thought (4)

WS '08–'09 Psychology. *Müller*: Psychology (4)
Ethics. *Husserl*: Fundamental problems in ethics (2)

SS '09 Psychology. *Müller*: Psycho-physical method (2); Exper. psych.
Pedagogy. *Baumann*: History of ped. (2)

WS '09–'10 Psychology. *Müller*: Psychology (4); Exper. psych.
Müller & Katz (d): Exper. psych. (1)
Ethics. *Nelson* (d): Principles of ethics (4)
Pedagogy. *Husserl*: General history of pedagogy (2)

GREIFSWALD

SS '07 Psychology. *Schuppe*: Psychology (3)
Pedagogy. *Rehmke*: History of ped. (3); Systems of ped. (3)

WS '07-'08 Nothing offered

SS '08 Psychology. *Rehmke:* Psychology (3); The freedom of the will (2)
Ethics and Pedagogy. *Schuppe:* Outlines of ethics and ped. (3)

WS '08–'09 Nothing offered.

SS '09 Psychology. *Schuppe*: Psychology (3)
Schunkel (a.p.): History of psych. (2)
Pedagogy. *Rehmke*: History and systems of ped. (3)

WS '09–'10 Psychology. *Schmekel* (a.p.): Methods and results of exper. psych. (2)

HALLE

SS '07 Psychology. *Ebbinghaus*: Experimental psychology (2)
Uphues (a.p.): General and ped. psych. (2)
Schwarz (d): General psychology (1)
Pedagogy. *Fries*: The Prussian educational system in its historical development (1)
Schwarz (d): General pedagogy with reference to experimental didactics (3)

WS '07–'08 Psychology. *Busse*: Psychology (4)
Schwarz (d): Introduction to exper. psych. (2)
Pedagogy. *Fries*: History of pedagogy since the Middle Ages (2); Pedagogical exercises (1)*

SS '08 Psychology. *Uphues* (a.p.): Psychology (4)
Aall (d): Introduction to exper. psych. (2)
Pedagogy. *Fries*: Selected chapters in general didactics (1)
Aall (d): Experimental pedagogy (2)

WS '08–'09 Psychology. *Ebbinghaus*: Psychology (4)
Pedagogy. *Fries*: History of ped. since the Middle Ages (1)
Schwarz (d): Experimental pedagogy (2)

SS '09 Psychology. *Uphues*: Psychology (4)
Ebbinghaus: Experimental psychology (2)
Pedagogy. *Fries*: The Prussian educational system in its historical development (1); Ped. exercises (1)

WS '09–'10 Psychology. *Meumann*: Psychology (4)
Pedagogy. *Meumann*: Introduction to pedagogy (2)
Fries: History of ped. since the Middle Ages (2); Pedagogical exercises (1)

HEIDELBERG

SS '07 Pedagogy. *Uhlig*: The most important disputed questions of the present concerning the organization and administration of instruction in the higher schools (2); Extracts from the ped. writings of Herbart (1); Lectures on parts of pedagogical poems of Lucretius and Ovid (1)
Boeckel (Gymnasial Director): Practical ped. Exercises (2)*

WS '07–'08 Psychology. *Elsenhans* (d): Psychology (4)
Ethics *Windelband*: Ethics (4)
Pedagogy. *Uhlig*: History of educ., instruction and ped. theories (2); Lectures on the pedagogical classics (1)

SS '08 Pedagogy, *Uhlig*: The most important disputed questions of the present concerning the organization and administration of instruction in the higher schools (1)

WS '08–'09 Pedagogy. *Uhlig*: History of educ., instruction, and ped. theories (2); Herbart's outline of ped. lectures and E. v. Sallwürk's *Normalstufen*

SS '09 Ethics. *Troeltsch*: Ethics (5)
Pedagogy. *Uhlig*: The most important disputed questions of the present concerning the organization and administration of instruction in the higher schools (2)

WS '09–'10 Pedagogy. *Uhlig*: Ped. Classics, Rousseau and Pestalozzi (1)

JENA

SS '07 Ethics. *Rein*: Outlines of ethics (2)
Pedagogy. *Rein*: General didactics (2): Ped. seminar with practical exercises (3)

WS '07–'08 Psychology. *Eucken*: Psychology (3)
Pedagogy. *Rein*: Special didactics (3): Foreign school systems (1): Ped. seminar (3)

SS '08 Psychology. *Linke*: (d) Psychology (3)
Ethics. *Eucken*: Ethics (2)
Pedagogy. *Rein*: Special didactics (2): Life and teaching of Herbart; Ped. seminar (3)

WS '08–'09 Psychology. *Liebmann*: Psychology (3)
Ethics. *Rein*: Outlines of ethics (2)
Pedagogy. *Rein*: General pedagogy (1); Ped. seminar (3)
Eucken: History of modern pedagogy (1)

SS '09 Psychology. *Rein*: Elements of empirical psych. (2)
Linke (d): Applied psych. (2); Attention (1)
Pedagogy. *Rein*: General didactics (2); Ped. seminar (3)

WS '09–'10 Psychology. *Eucken*: Psychology (2)
Strohmayer (d): Neurological diagnosis, with practical exercises (1); Discovery and treatment of mental weakness in youth, for physicians and teachers.
Ethics. *Linke* (d):Principal problems of ethics and jurisprudence (2)
Pedagogy. *Rein*: Herbart (2); Special didactics (3); Ped. seminar (3)

KEIL

SS '07 Ethics. *Tönnies* (d): Sociology and ethics of family life (1)

WS '07–'08 Psychology. *Martius*: Psychology (4); Psych. seminar (2)

SS '08 Nothing offered

WS '08-'09 Psychology. *Deussen*: Psychology and systems of phil. (4)

SS '09 Psychology. *Martius*: Psych. seminar (2)
WS '09–'10 Psychology. *Martius*: Psychology (4) Psych. seminar (2)

KOENIGSBERG

SS '07 Psychology. *Ach*: Exper. psych. works, in seminar*
Ethics. *Kowalewsky* (d): Fundamental problems in ethics (1)
WS '07–'08 Psychology. *Ach*: Child psych. and exper. pedagogy (1)

SS '08 Psychology. *Ach*: Psychology (4)
Pedagogy. *Walter*: History and outlines of pedagogy (4)

WS '08–'09 Pedagogy. *Walter*: History and outlines of pedagogy (4)

SS '09 Psychology. *Ach*: Introduction to exper. psych. (1½); Exper. psych. (6)
Hallerworden (d): Chapters in applied psych. (1)
Ethics. *Kowalewski* (d): Ethics (2)
Pedagogy. *Goedeckemeyer*: History and outlines of pedagogy (4)

WS '09–'10 Psychology. *Ach*: Psych. (4); Exper. psych. (by appointment)
Hallerworden (d): Shakespeare's dramatic art as a subject for applied psych. (2)

LEIPSIC

SS '07 Psychology. *Wundt*: Psychology (4); Psych. Seminar
Wirth (a.p.): Psych. of vision (2)

Ethics. *Barth* (a.p.): Introduction to moral philosophy (1½)
Pedagogy. *Volkelt*: History of pedagogy I, Middle Ages to Rousseau (4); Phil.-ped. seminar
Jungmann: Introduction to pedagogy (2); Practical pedagogical seminar

WS '07–'08 Psychology. *Brahn* (d): Psychology (4): Child psych. (2); Sense perception (1)
Wundt: Psych. seminar
Ethics. *Heinze*: Ethics and outlines of jurisprudence
Pedagogy. *Volkelt*: History of pedagogy, II, Rousseau to Herbart (3); Phil.-ped. seminar
Jungmann: History of higher instruction from the Reformation to the present (2); Prac.-ped.seminar.
Barth (a.p.): Essentials in education and the theory of instruction on the basis of the psychology of the present (2); Ped. Society

SS '08 Psychology. *Wundt*: Psychology (4): Psych. seminar
Ethics. *Richter* (d): Critical history of ethics
Lipps (d): Philosophical ethics (2)
Pedagogy. *Volkelt*: Pedagogy in the school of Herbart (1): Phil.-ped. seminar
Jungmann: Introduction to ped. (2): Practical-ped. seminar.

WS '08–'09 Psychology. *Wirth* (d): Experimental analysis of attention (2)
Krueger (d): Comparative psych. of primeval races
Lipps (d): Outlines and essentials of psych. (3)
Wundt: Psych. seminar
Pedagogy. *Volkelt*: General pedagogy (3); Phil.-ped. seminar
Barth (a.p.): History of pedagogy from the Renaissance to the Enlightenment (2); Ped. Society
Jungmann: History of higher education since the Reformation (2); Interpretation of Latin sources of pedagogy (1)

SS '09 Psychology. *Wundt*: Psychology (4); Psych. seminar
Wundt, Wirth (a.p.), & *Klemm* (d): Psych. laboratory (29)
Wirth (a.p.): Theory of psych. method (2)
Krueger (d); Psych. and ethics of economical living (2)
Brahn (d): Child psych. and exper. pedagogy (2)
Pedagogy. *Volkelt*: History of pedagogy (4); Phil.-ped. seminar, Goethe's views of life
Jungmann: Didactics of the higher schools (2): Practical-ped. seminar
Rietschel: History of pedagogy

WS '09–'10 Psychology. *Wundt & Wirth* (a.p.): Psych. laboratory (7)
Wirth (a.p.): Psychology (4)
Salow(?): Introductory course in exper. psych. (2)
Brahn (d): Outlines of psychology (1½)
Klemm (d): History of modern psych. (2)
Ethics. *Barth*: History and systems of ethics (2)
Pedagogy. *Volkelt*: History of ped. from Rousseau to Herbart (3); Phil.-ped. seminar, Jean Paul's Levana and extracts from the writings of W. v. Humboldt
Barth (a.p.): Essentials of the theory of education and instruction on the basis of modern psych. (2)
Jungmann (a.p.): Introduction to pedagogy (2); Practical-ped. seminar
Hofmann (Theology): Pedagogy and its history (4); Pedagogical seminar (1)
Lange (Medicine): School hygiene and school disease (2)

MARBURG

SS '07 Psychology. *Menzner* (a.p.): Psychology (4)

WS '07–'08 Ethics. *Menzner* (a.p.): Ethics (2)
Pedagogy. *Natorp*: History of pedagogy since the Renaissance (3); Phil. ped. seminar*

SS '08 Ethics. *Cohen*: Ethics and jurisprudence (4)

WS '08–'09 Psychology. *Cohen*: Psych. as an encyclopedia of philosophy (4)
Pedagogy. *Natorp*: General pedagogy (3)

SS '09 Psychology. *Schwarz*: Psych. of mental labor and endowment, with experiments (1)

WS '09–'10 Psychology. *Natorp*: General psych. (3); Psych. exercises (2)
Schwarz: Introduction to exper. psych. (2)
Pedagogy. *Natorp*: History of pedagogy since the beginning of modern times (3); Herbart's philosophy and ped. (2)

MUNICH

SS '07 Psychology. *Pfänder* (d): Outlines of psychology (4)
Schneider (d): Empirical psychology (4)
Ethics. *Scheler* (d): Fundamental questions in ethics (3)
Pedagogy. *Rehm*: History of pedagogical theories from the Enlightenment to the present (4)

WS '07–'08 Psychology. *Lipps*: Psychology (4)
Pedagogy. *Pfänder* (d): Outlines of the theory of education and instruction on psychological principles (4)

SS '08 Psychology. *Schneider* (a.p.): Empirical psych. (4)
v. Asler (d): Outlines of psych. (4)
Lipps: Psych. seminar*
Ethics. *Lipps*: Ethics and phil. principles of the theory of law and society (4)
Pedagogy. *Rehm*: Theory of pedagogy and didactics for higher schools (4)
Fischer (d): Ped. exercises*

WS '08–'09 Psychology. *Lipps*: Psychology I (5)
Pedagogy. *Pfänder* (d): Outlines of the theory of education and instruction on psych. principles (4)

SS '09 Psychology. *Schneider* (a.p.): Psych. with special reference to ped. questions involved (4)
v. Asler (d): Psych. (4); Psych. exercises (1)
Fischer (d): Psych. exercises ($1\frac{1}{2}$)
Burger (d): Art and race psych. (2)
Ranke: Anthropological psych. (4)
Ethics. *Geiger* (d): Introduction to ethical problems (2)
Fischer (d): Introduction to problems of sociology (3)
Pedagogy. *Rehm*: History of ped. theories (4)
Jordan: Fundamental questions in the method of modern language instruction (1)

WS '09–'10 Psychology. *Lipps*: General psych. (5); Psych. seminar ($1\frac{1}{2}$)
Fischer (d): Psych. exercises ($1\frac{1}{2}$)
Meyer (d): Psych. of Aristotle (1)
Ethics. *Scheler* (d): Fundamental problems of ethics (4)

MÜNSTER

SS '07 Psychology. *Meumann*: Empirical psychology (4)

WS '07–'08 Psychology. *Geyser* (a.p.): Psychology (4)
Pedagogy. *Meumann*: General ped. on psych. and exper. principles (2)

SS '08 Psychology. *Meumann*: Introduction to exper. psych. and ped. (2)

WS '08–'09 Psychology. *Meumann*: Introduction to exper. psych. and ped. (2)
Geyser (a.p.): Psychology (4)
Ethics. *Koppelmann* (d): The most important problems of ethics and jurisprudence

SS '09 Psychology. *Meumann*: Psych. exercises
Pedagogy. *Koppelmann* (d): Gymnasial pedagogy and the teacher's office (2)

WS '09–'10 Psychology. *Geyser* (a.p.): Psychology (4); Discussion of psych. questions (1)
Pedagogy. *Cauer*: Outlines and selected chapters in didactics (2)

ROSTOCK

SS '07 Ethics. *Erhardt*: Ethics (2)

WS '07–'08 Nothing offered

SS '08 Psychology. *Erhardt*: Psychology (4)

WS '08–'09 Pedagogy. *Erhardt*: Pedagogy (2)
SS '09 Ethics. *Erhardt*: Ethics (2); Exercises in the ethics of Ed. v. Hartmann (2)

WS '09–'10 Nothing offered

STRASSBURG

SS '07 Nothing offered

WS '07–'08 Psychology. *Baeumker*: Psychology (4)
Ethics. *Frhr. v.d. Pfordten* (d): Ethics (2)

SS '08 Pedagogy. *Ziegler*: Pedagogy (2)

WS '08–'09 Psychology. *Ziegler*: Empirical psych. (4)
Ethics. *Ziegler*: Ethics (2)

SS '09 Psychology. *Baeumker*: Psych. exercises (2)
Pedagogy. *Ziegler*: History of ped. (2)

WS '09–'10 Psychology. *Baeumker*: Psychology (4); Introd. to exper. psych. (1)
Ethics. *v.d. Pfordten* (d): Ethics (2)
Wundt (d): History of Greek ethics (2)

TÜBINGEN

SS '07 Nothing offered

WS '07–'08 Psychology. *Maier*: Psychology (4)
Ethics. *Maier*: Ethics (4)

SS '08 Psychology. *Spitta*: General psych. (4)
Ethics. *Adickes*: The deterministic view-point and its consequences for religion, ethics, and pedagogy. (1)

WS '08–'09 Psychology. *Adickes*: Psychology (4)
Ethics. *Spitta*: Philosophical ethics (4)

SS '09 Psychology. *Spitta*: General psych. (4)
Pedagogy. *Schiele* (d): Church and school in the nineteenth century

WS '09–'10 Psychology. *Maier*: Psychology (4)
Ethics. *Adickes*: Philosophical ethics and jurisprudence (4); Exercises in ethical questions (1)

WÜRZBURG

SS '07 Ethics. *Scherer* (d): Ethics (4)
Pedagogy. *Boll*: Theory and history of educ. and instruction from the eighteenth century to the present (4)

WS '07–'08 Psychology. *Scherer* (d): Psychology (4)
Buehler (d): Psych. of speaking and reading (2)

SS '08 Ethics. *Scherer* (d): Ethics (4)
Pedagogy. *Buehler* (d): Exper. ped. (4)

WS '08–'09 Psychology. *Külpe*: Psychology (4)
Scherer (d): Psychology (4)
Pedagogy. *Stölzle*: Logic and the theory of method (4)

SS '09 Psychology. *Külpe*: Psych. of thought and feeling (2); Psych. exercises (2)
Külpe and *Buehler* (d): Exper. psych. (5)
Buehler (d): Child psychology (2); Introd. to exper. psych. (2)
Ethics. *Neudecker* (d): The trend of modern ethics (2)
Pedagogy. *Stählin*: History of ped. (4)

WS '09–'10 Psychology. *Buehler* (d): Exper. psych. (2)
Pedagogy. *Buehler* (d): Exper. ped. (4)

EDUCATIONAL PSYCHOLOGY AT THE BOSTON MEETING OF THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

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Readers of this JOURNAL have seen elsewhere general reports of the gathering of scientific men in Boston last December, on the occasion of the sixty-first meeting of the American Association for the Advancement of Science. Estimates of the actual number in attendance have varied somewhat widely, but the total, including those registered with the numerous affiliated organizations, was probably not far from 2000.

Educational psychology was represented upon the programs of several of these different societies. Indeed, not infrequently two or more organizations were listening at the same time to papers which were of interest to the student of this subject, and he found himself devoting much valuable time to the street-cars between Cambridge and "Tech." and the Harvard Medical School in a vain attempt to hear all that was attractive to him in the various programs. Seldom has been more clearly exemplified the increasing attention which educational psychology is receiving, and also the need for sufficient coöperation within this field to bring to a common focus these widely distributed activities.

At the opening meeting of section L, the section for Education, Professor E. L. Thorndike presented under the caption of "Units and Scales for Educational Measurement" a report upon a laborious research which is designed to perfect a scale of merit in children's hand-writing. Samples of writing were shown which had been found to represent eleven degrees of excellence, each of the equal steps in the scale being one-tenth of the difference between the

best and the poorest writing of pupils in the intermediate and grammar grades.

The discussion of Professor Thorndike's contribution was appreciative and entirely favorable until Professor Judd arose to present his paper upon The Application of the Experimental Method to Problems in Education. Professor Thorndike's scale, he said, was a scale for the measurement of a non-psychological *product*, whereas education is concerned not with the products but with the processes of mental development. Two samples of writing equal in merit as regards legibility and beauty may be products of vastly different degrees of development in motor coördination. One reason, said Professor Judd, why so much of the recent work upon mental tests has proven futile and valueless for education is found in the fact that it has been directed toward concrete products, instead of toward the ability to improve. The question is not, have these two pupils mastered the same subject-matter, but rather, how, by what methods, have these facts been achieved? For example, experiments upon the acquisition of skill have shown that acquisition with knowledge of the changes has a value which is lacking where the learner is unaware of the nature of the improvement, although the subject-matter acquired is identical in the two cases. Further experimental investigation of this and similar problems is needed.

Another pressing need according to Professor Judd is a determination, more exact than is possible with the questionary method, of the interests exhibited by children at different ages. It is also much to be desired that teachers shall make more experiments in teaching, *e. g.*, in making a well controlled comparison of the natural and the grammatical methods in language instruction. Much scattered investigation of this sort is being carried out, but it ought to be made more available, perhaps through a committee of section L which would serve as a clearing house for results and a center of information for prospective investigators.

At the conclusion of Professor Judd's paper, Professor Thorndike took his adversary into camp by granting all that had been said regarding the need for the study of mental processes, and then calling attention to the fact that any study of mental development

presupposes a comparison of products of some sort, which ought to be accurately measured. The attack was quickly renewed by Professor Judd, and the audience had the keen pleasure of hearing the rapid give-and-take of a brief but brilliant *Auseinandersetzung*.

In a penetrating and closely reasoned paper, Professor G. H. Mead urged the necessity for a scientific study of the social consciousness in education, for the reason that the psychology of instruction necessarily implies a social situation. The Herbartian psychology was criticised as being an association psychology which regards the child as an apperception-mass instead of a self among selves. The consciousness of self must be an integral part of instruction: the subject-matter must be brought into relation with the problems of the child and become a matter of personal import. How this is to be done is a problem which social psychology and scientific education must work out in detail.

Prof. W. F. Dearborn has been using the Dodge photographic method for the recording of eye-movements of children in the early grades, with a view to formulating a unit of measurement of progress in reading ability. He adduced highly suggestive but as yet hardly conclusive evidence to show that the number of ocular fixations in each line may be used as an index of the number of acts of attention, and consequently employed to discover, for example, whether a child really reads by word-wholes or by letters and syllables. Professor Dearborn has demonstrated that it is possible for the experimenter to obtain with practice a high degree of accuracy in counting the number of fixations by watching the reader's eye directly. The use of this simple method opens a promising field of investigation regarding the relative merits of various methods of teaching reading, the optimal size of type in first readers, and so on.

In reporting an inductive, statistical study of various Qualities of Merit in Teachers, Prof. W. C. Ruediger stated that he had found no correlation at all between general merit and health, while teaching skill and ability to keep order showed higher correlations with general merit than any other of the fourteen qualities rated. The correlation between merit and experience increases up to ten years and then declines. The best teachers in the elementary schools are found in the two lowest and highest grades.

At later sessions of section L were heard reports of "Scientific Studies of the American College," by Mr. E. C. Sage of the General Education Board and Professors Strayer and Thorndike of Columbia. Such studies as these mark the transition from the period of wholesale criticism and denunciation of the college to that of careful analysis and constructive suggestion.

Joint sessions of considerable interest were held with the Social Education Club, and with the American Psychological Association. A joint meeting with section B on The Teaching of Physics was also announced, but either because the meeting was rather late in the week or because none but the Physicists realized its importance, there were practically no members of section Lpresent, if one makes exception of a few whose primary interest is in physics and who would have been in attendance anyway. Some of the propositions presented by Prof. E. H. Hall for discussion were purely technical, but others were of a more general and fundamental nature, and it is to be regretted that a larger number of specialists in education were not present to share in the discussion. Regarding the training of physics teachers it was maintained by Professor Hall that more thorough and specialized preparation in physics is necessary. Professor Woodhull and Professor Mann,on the other hand, contended that what is needed is a broader training. Physics teachers need a greater familiarity with related subjects so that their courses may be enriched and brought into closer contact with common life. The candidate for the master's degree should be encouraged to sacrifice some of his advanced courses in physics to make room for the study of education.

Ten papers relating to the teaching of chemistry were presented before one of the sections of the American Chemical Society. The American Nature Study Society had a very live session devoted to the content of the course in nature study, with especial reference to the need for more attention to the inorganic aspects of nature. On the programs of many of the other sections and societies were isolated contributions to the science of teaching.

In the list of papers presented before Section A—Mathematics and Astronomy—the only contribution dealing specifically with an educational theme was one in which Prof. D. E. Smith described

the work now being carried forward by the International Commission on the Teaching of Mathematics. This commission which originated at the international congress in Rome in 1908 had as its purpose the comparative examination of the methods of instruction and the courses of study in the secondary schools of the different nations; but the scope of its investigation has extended until it now includes elementary instruction on the one hand, and on the other the teaching of mathematics in colleges and technical schools, the preparation of mathematics teachers in normal schools and universities, and research methods and requirements for higher degrees. It is not the aim of the commission, said Professor Smith, to undertake any propaganda of reform or to strive to bring about international uniformity, but rather to serve as a clearing-house, to make it possible for each nation to see what the others are doing.

The American commission is composed of two hundred and seventy members, organized in fifteen committees and sixty-one sub-committees. When in the course of a few months their labors are completed the report will be a mine of information for the educator who is curious to know, for example, what aims are actually controlling the teaching of mathematics in the freshman year of our colleges, or how completely the subject matter drawn from the needs of modern daily life has replaced the obsolete business problems and the remains of the ancient theory of numbers which until a few years ago were looked upon as of paramount importance in the mathematics of the elementary schools.

The American Psychological Association was the guest of the Harvard department of psychology and held its sessions in the commodious rooms of Emerson Hall. One session was devoted to reports of investigations in the field of general experimental psychology and demonstrations of new apparatus, and one session each to theoretical psychology, abnormal psychology, animal psychology, educational psychology, and methods of teaching psychology. Only the programs of the last two mentioned have a sufficiently immediate interest to the student of education to warrent anything like a full report here; but some brief mention should be also made of the experimental contributions in animal

behavior, as illustrative of the present line of attack in this portion of the field of genetic psychology.

Three of these investigations were within the field of visual discrimination. Mr. L. W. Cole presented evidence that the raccoon, although a night-seeing animal, nevertheless possesses powers of color discrimination.

Dr. Florence Richardson has been gathering fresh facts regarding the place of vision in the life of the rat. By training rats to leap from one platform to another close by, and then varying the relative height and the distance between the platforms, it was shown that vision plays some small rôle in these coördinations, especially for purposes of orientation, but it does not make possible accurate perceptions of distance.

Prof. Yerkes described some rigorously controlled experiments now in progress in the Harvard laboratory, aimed to determine the limits of visual perception of size and form in the dog. The experiments brought out incidentally and unexpectedly some striking evidence of acute tactile discrimination, and emphasized the need for extreme caution against the possibility of introducing secondary criteria upon which judgments of comparison may be based. The dog in learning to choose the larger of two circles was held in leash each time until all was ready for the act of choice. The difference between the circles was gradually reduced and a fine degree of discriminative ability was attained. But this ability vanished when the experimenter abandoned the use of the leash! Such facts remind us that in experimenting with children and adults no less than with animals, extreme precautions are necessary to prevent the possibliity of indications and suggestions given quite unconsciously by the experimenter.

It is surprising that but little study has been made of the behavior of the anthropoid apes. Mr. M. E. Haggerty made a preliminary report of some experiments upon a chimpanzee and two orang-outangs. The animals were required, as were the ones studied by Hobhouse, to secure food by using a hooked stick to draw it within reach and also by using a stick to poke the food out of a hollow pipe. The chimpanzee failed to solve the problems unaided, and was not helped by seeing the trick done by another

ape; but both the orang-outangs learned the use of the hooked stick at the first trial. One learned the second trick unaided and the other learned it after seeing it done by his mate. The results suggest to Mr. Haggerty that the apes offer a remarkably fertile field for the investigation of animal intelligence; that the sense-impulse theory of animal behavior is here inadequate; and that imitation probably plays a greater rôle than among the lower species.

While no thinker of the first rank has dared since the days of Herbart to advocate a "faculty psychology," the way of thinking which that opprobrious term represents seems to be perennially recurrent and to demand ever fresh refutation. Thus, Prof. W. D. Scott finds it necessary to remind us that there is no such thing as "general suggestibility." He measured the susceptibility of a group of students to suggestion regarding the colors of their after-images, and also regarding the threshold of warmth sensation. Many who were highly suggestible in the first test were not suggestible in the second, and *vice versa*. Indeed, the coefficient of correlation was practically zero.

Gathering her data from observation, from questionaries and from other sources Miss Theodate L. Smith has made "A Genetic Study of the Psychology of Shame" in animals and children. Both in the individual and in the race, she concludes, the development of shame coincides with the development of self-consciousness, and reflects the social environment. Its moral quality is a late development and arises only when there is a content of consciousness which is felt to be in disharmony with, and unworthy of, the ideal self.

Three rather incomplete studies on the causes of retardation were summarized by Dr. F. Arnold. Obstructed breathing, artificially produced, decreased the efficiency of pupils as tested in memorizing, copying, doing arithmetic and making cross-marks. Defective vision seemed not to play any part in retardation. Arbitrary and artificial systems of grading which ignore individual differences operate to automatically retard those children varying much from the average.

The report of the Committee on the Teaching of Psychology

called forth words of high commendation from all sides. Prof. Whipple's portion, on the teaching of psychology in normal schools was based on a study of the conditions in nearly one-half of the normal schools in America. He pictured vividly the typical institution and then presented a long list of conclusions and specific recommendations. Miss Calkins described with much less detail the conditions in the forty-seven colleges she studied, and made a few definite suggestions.

A feature of the absorbingly interesting report read by President Sanford was a selection of quotations from letters of university teachers of psychology, revealing a striking diversity of aim and method. The general report, prepared by Professor Seashore, the chairman of the committee, was packed so full of meaty facts, sane recommendations and practical suggestions that any attempt at summary is futile. Fortunately for the immediate future of psychology in America, the Psychological Association voted to publish the report of the committee *in toto*, and consequently it will before many months be available for study by all teachers of psychology. The committee made suggestions looking toward action of the Association in bringing teachers of psychology in various sections of the country together for local conferences. It also proposed the organization of two committees, one on "the class experiment" and a second on "elementary experiments without laboratory apparatus." For some reason no steps were taken by the Association in any of these directions, and these matters must wait until the next annual meeting in Minneapolis, or be taken up through individual initiative.

Mention should here be made of an excellent paper read at another session of the Association by Professor J. P. Hylan, entitled, "An Instance of Intensive Teaching of Psychology." The methods used, and especially the order of topics employed, differed widely from those recommended in the general report of the committee.

Among the most notable features of any meeting of the A. A. A. S. are the addresses delivered by the retiring chairmen of the different sections and societies. At the Boston meeting four of these dealt with themes in the fields of psychology or of education.

Professor Guthe spoke before the physics section upon "Some Reforms Needed in the Teaching of Physics in our Colleges and Universities." He urged the modification of the curriculum by the addition of advanced general courses in place of some of the highly specialized courses which are at present the only ones open to prospective high-school teachers. Another needed reform lies in the direction of greater exactness and precision in the use of techincal terms.

In speaking before the section of Anthropology and Psychology upon "Racial Differences in Mental Traits," Professor Woodworth contended that it is possible to account for the differences observed without assuming that they are due to differences in native ability.

In addressing the Psychological Association upon "Consciousness and Evolution," Professor Judd reminded his hearers that with the evolution of consciousness the organism becomes able, not merely to adjust itself to its environment, but also to adaptively modify the environment to itself. What this fact implies for the definition of psychology and the determination of its relations to the other sciences was illuminatingly pointed out.

An eager audience heard Professor Dewey deliver a brief address before the education section upon "Science as Method of Thinking and as Information in Education." What we want, he said, is not bits of information, but the scientific attitude. Science as method is not to be had by means of numerous short general courses in various fields of science.

Each of these presidental addresses has already been published in full in *Science* or in the *Psychological Review*.

COMMUNICATIONS AND DISCUSSIONS

THE DOCTRINE OF FORMAL DISCIPLINE: TWO NEGLECTED INSTANCES OF TRANSFER OF TRAINING

Recent experimental results have offered cumulative evidence that the doctrine of formal discipline, all but repudiated in this day of educational vandalism, is still good pedagogical doctrine under certain limitations. Specific training does, under certain conditions and in varying measure, insure general training. Training of one function is susceptible of transfer to another analogous function: training of one organ allows of a cross induction of effect to another corresponding organ: the effects of exercise in one member are transferred, in varying degree, to another similar member.

It is not necessary to detail the experiments here. This has been done adequately by Horne, Angell, Judd, Pillsbury, Thorndike, Bagley, Colvin, O'Shea, Heck, and others. It is sufficient to refer briefly to the experimental facts. The fact of transference has been established in operations as diverse as the following:

In spatial discrimination, transfer is possible from the finger tips of the left hand to the right, or from the third phalanx to the first phalanx (Volkmann); the practiced discrimination ability for sound intensities has been transferred to intensities of brightness, and for sorting cards to typewriter reactions (Coover and Angell). The sensitivity for tactual, gustatory, olfactory and visual stimuli can be increased by practicing with sound stimuli (Urbantschisch, Epstein); and the same holds with respect to the estimation of magnitudes and weights, perceiving parts of speech, and the marking of words (Thorndike, Woodworth, Norsworthy)[1]. The effects of practice in rapidity of tapping, muscular steadiness, lunging at a target with a foil, and muscular power or voluntary effort are transferred to the unpracticed hand (Scripture, Smith, Brown, Davis). Series of experiments with and without knowledge of results

[1] It should be stated, to avoid a wrong inference, that some of the results of these experiments are discrepant with the conclusion drawn from them in this paper.

have shown similar spreading of training in the judging of the length of lines, the perception of the Müller-Lyer illusion, and hitting a target under water, when the subjects were permitted to know the results of their practice (Judd). Similarly when the children's attention has been focalized upon neatness as an ideal of general application, neatness in geography has been found to transfer to arithmetic, grammar or history (Ruediger). Special training gives us a method of orientation or general power to meet entirely new situations more effectively (Bair), and by becoming habituated to distractions in one situation we can ignore them in others (Vogt). Finally a number of memory experiments leave us with the same conclusion. Children trained to commit poetry were able to learn selections from an historical reader with greater ease, the subject matter being quite different (Winch). Here we find transference of training at least in the field of verbal memorizing. By being trained to memorize meaningless syllables the power to immediately recall and retain numbers, letters, substantives of one syllable, Italian, prose and poetic words, visual signs, etc., has been increased from 55 to 70 per cent (Meumann, Ebert). Improvement of memory in a test series was found at times to be positively greater than in a training series where the order of four tones was memorized, as against the memorizing of the order of brightnesses, tones, and geometrical figures, the extent of arm movement, and verse (Fracker). As a further addition to this evidence I wish to direct attention to certain results in experiments with reversible perspective illusions[2] which bear upon the question, and which seem to have escaped the notice of reviewers.

Several years ago a half hour daily during about sixty experimental days was spent by another subject and myself in an attempt to control the reversions in a number of reversible perspective outlines, such as a parallelopiped, book, table and pyramid. Most of the figures were plane drawings, but some were tridimensional or skeleton models. It had been ascertained in prior experiments that these figures possessed a preponderant perspective (except possibly the pyramid). The practice thus consisted in the attempt to uniformly envisage the infrequent or non-predominant perspective, in all cases monocularly.

It was found that perspectivity was subject to a high degree of practice control. Arranging the total of 9246 trials into three successive time groups, the percentage of successful control amounted, respectively,

[2] Wallin, Optical Illusions of Reversible Perspective, 1905, Chapter XIII The relation of Practice to Reversible Perspectives, pp. 264-286.

to 40, 62 and 82 per cent. There was an average gain of 42 per cent between the first and the last 20 days of the series. Moreover, and this is especially to the point in the present connection, it was found that the practice results had been transferred to the unpracticed eye. Occasional tests were made with the unused eye during the latter third of the series, and corresponding successes were obtained. Practice with one eye afforded practice for the other unused eye. The education of the one retina to envisage a refractory perspective constituted a cross-education of the other retina to function in the same manner. There was established a *general* disposition or tendency to meet a given situation in a given way, which was of such strength that an organ not directly exercised at all shared in the tendency. This general tendency is explicable upon the assumption that the effects of practice are *central:* the training of the one eye established certain cortical tendencies and mental attitudes. The unused retina therefore *tended* to respond in harmony with the central predisposition. At the same time, certain peripheral elements could be involved conjointly. "Thus to take only the factor of fixation: since the two eyes function as a unity, the unused eye fixated *sympathetically* with the other. Or the establishing of fixation tendencies for the used eye gave rise to a sensation series which reflexly caused the same sort of adjustment to be made by the suppressed eye when it was (later) consciously fixated upon the drawing. Even without direct stimulation by the objective rays, the covered eye was being trained; it acquired by *cross-induction* a favorable fixation *set.*" But even in the latter case, the gradually acquired mode of functioning of the used eye was so *generalized* as to inaugurate similar responses in the other. There would here seem to be then a tendency of training to spread or generalize, whatever the explanation.

Another observation in connection with reversible perspectives, though less significant, also contains a pertinent suggestion. In a given series of experiments in which the figures were reversed in the direct and indirect visual fields it appeared that the reversions occurred about two and a half times faster when the figures were directly regarded instead of being seen by the peripheral retina. But after practice with certain figures it sometimes happened that the figures (the cube, pyramid and book) reversed most readily when a point outside the figures was fixated. This furnishes an instance of the transference of fixation motives attaching to the *fovea* to the *peripheral* retina. Here an acquired foveal disposition spread to the adjacent retinal elements. In other words, the foveal tendency was transmuted into a "generalized retinal habit."

These two instances of "cross-education" or transference of training have a certain value when taken in connection with the more familiar experiments which bear upon the doctrine of formal discipline. They are offered simply as furnishing evidence in favor of the doctrine, with no attempt on my part at this time to further justify, limit and explain it.

J. E. Wallace Wallin.

Cleveland Normal Training School.

THE ORGANIZATION OF THE DEPARTMENT OF EDUCATION AT THE UNIVERSITY OF VERMONT

I am very glad to accept the invitation of the editor to make a statement concerning the organization of the Department of Education at the University of Vermont. Departments of education in universities are comparatively new, and in most places education courses are offered as electives on the same basis as any other subject and with the same degree of independence. A student takes a course in education just as he takes history or latin, as if it had nothing to do with his other work. He may apply some of his educational theory to his other work. But the fact that such application is the primary reason for taking the education course does not appear in any definite form, and though he may be conscious of the benefit he derives from the course, the department would be strengthened if the organization were such as to show that education is intimately related to every other subject. Even when education courses are elected, not for the purpose of teaching but for the sake of general information, culture, and breadth of view, it must be remembered that the object is to get an insight into educational tendencies which are found in other subjects. It is very desirable that college graduates who are not teachers should have made some special and systematic study of education. They are the men who are to hold positions on public school boards and on boards of trustees in colleges. Method courses are not recommended for them but the courses they do take, the history of education, the philosophy of education and school administration, must never be thought of as isolated subjects.

Except in a few institutions which have large departments of education students are not preparing to teach education itself, but they are going into elementary and secondary schools and into colleges to teach some other subjects which they study in college. The chief function

of the department of education is to strengthen them as teachers of those subjects. Having this in mind and wishing to make the department on paper represent exactly what it is doing in fact, an announcement has been made with the following as the salient points:

Students who have completed the first two years in any department of the University may enter the department of education, and when the two years of required work are completed they will receive the degree of Bachelor of Science in Education.

Any student enrolled in any department will, with the permission of the dean of the department in which he is enrolled and of the dean of the department of education, be admitted to any of the courses in education for which he is qualified, and will retain his standing in the department in which he is enrolled and be entitled to the degree to which it leads, and if he shall have satisfactorily passed the work required in the department of education he may have appended to the baccalaureate degree the words "in education."

Special students are admitted to the department subject to the same conditions that hold in other departments of the University. Education courses are also open as free electives to juniors and seniors in any department.

The requirements of the department are: psychology; principles of instruction; history of education; one other full course in education, selected after conference with the dean of the department (the courses offered are the philosophy of education, genetic psychology, school administration and secondary education); two courses in secondary methods (amounting to one semester hour); two courses in each of two subjects given in other departments; additional free electives sufficient to make a total of at least fifteen hours per week exclusive of argumentation and debate, which are required of all students in the College of Liberal Arts. A thesis is also required, treating of some subject studied in the University, from the educational point of view. This thesis must be accepted by the professor who teaches the subject and by the dean of the department of education.

Twelve short lecture courses in secondary methods are offered by members of the faculty who teach the subjects. A student must be prepared in subject matter before he enters one of these courses, and the lectures are devoted entirely to the teaching of the subject in the secondary school. Such courses are offered in Latin, Greek, French, German, English Language, English Literature, Chemistry, Physics, Botany, Zoölogy, Mathematics and History.

A candidate for the master's degree is advised to devote about one-half of his time to the subject of education and the other half to some other subject in which he wishes to specialize, and which he studies in part from the educational point of view. As a rule his thesis deals with his special subject, but he is required to discuss it in the light of educational principles.

J. F. MESSENGER.

University of Vermont.

THE INDIANAPOLIS MEETING OF THE DEPARTMENT OF SUPERINTENDENCE, MARCH 1–3, 1910

The mid-winter meeting of the Department of Superintendence has come to be regarded as the most important educational gathering of the year. While the attendance is not so large as at the July meeting of the N. E. A., the papers and discussions are, as a rule, of a much better quality, there are fewer distractions in the way of sight-seeing and other merely recreative features incident to vacation-time, and one is likely to meet a much larger number of the real leaders in educational work.

Of late years, this mid-winter meeting has come to serve as a clearing-house between the educational theorist and specialist on the one hand and the practical schoolman on the other hand. This tendency was clearly seen in the programme at Indianapolis. The general topic for the meeting, "The Recognition of Differences among Children, and the Resulting Modifications in Education," offered an opportunity for a series of discussions that should have a basis in proved fact. The chairman of the department, Stratton D. Brooks of Boston, made good use of this opportunity. The first general session included among its speakers such men as Ayres and Witmer. The programme of the second general session included the names of A. Ross Hill and A. H. Yoder. At the third general session, papers were read by Weber of Louisiana (who is one of Witmer's pupils) and A. D. Dean of the New York State Education Department.

One of the evening sessions was given over to the discussion of four papers on school hygiene and physical education, presented by T. F. Harrington of Boston, J. H. Musser of Philadelphia, L. H. Gulick and H. H. Horne of New York.

The sectional programmes also included a number of well-known

names. Robinson of Columbia University discussed the function of history in industrial education. Sargent of Chicago presented a paper on art in its relation to industrial education. Chamberlain of California and Charles of Illinois were also speakers at sectional meetings.

Throughout the discussions and even more noticeably in the animated "shop talk" of the lobbies and corridors, there were innumerable indications of a willingness upon the part of both the specialist and the practitioner to come together in a helpful way, and to aid and seek aid in the solution of common problems. This is as it should be, and is symptomatic of a condition that augurs most hopefully for educational progress. The superintendent has often had only too good a reason to be skeptical of such "expert" advice as the specialist has had to offer. And, on his side, the specialist has had at times sufficient cause to characterize the attitude of the practitioner as ultra-conservative or even reactionary. That this unfortunate condition is passing is not only a source of gratification, but—what is far more fundamental and important—an indication that the scientific study of educational problems is at last producing results that can command the respect of the practical schoolman.

Two societies whose membership is largely represented among the readers of this JOURNAL meet annually with the Department of Superintendence. One of these is the National Society for the Study of Education. (The adjective "scientific" has been dropped from the name of this organization; whether because the word itself was too awkward, or because its implied responsibilities and limitations were too onerous, does not appear.) This Society devoted its principal meeting to the discussion of a monograph by T. D. Woods of Teachers' College,—"Education with Reference to the Physical Well-Being of the Child." Through some over-sight on the part of the officers, nearly one hundred members were omitted from the mailing-list and from the roll of the Society; consequently they did not receive their copies of the paper. Whether for this reason or for some other reason, the discussion of the monograph was long and heated. The contention that hygiene may be taught effectively with but a minimum of anatomy and physiology found many opponents among those present; but the difficulties and discrepancies were finally harmonized by Suzzallo of Columbia in a remarkably clear analysis of the grounds of the contention.

The National Society of College Teachers of Education opened its sessions with a banquet on the evening of February 28. The chairman

of the Society, Hanus of Harvard, presided at the banquet. He introduced as the first speaker, Judd of Chicago, who described some phases of the work that is being done in the School of Education of which he is director. Forbes of Rochester told of the results that have followed from the use of the Rochester school buildings as civic centers, maintaining that the adoption of this policy has proved itself to be by far the most important educational event in the history of the city. Sargent of Chicago outlined some investigations that he has made in the field of industrial education. As a result of these investigations, Sargent believes that the assumption, now generally accepted, denying an educative influence to processes or exercises that have reached the plane of habit or automatic skill must be revised and perhaps reversed. Buchner of Johns Hopkins, Gore of Chicago, and Bolton of Iowa (the retiring secretary of the Society) were also among the speakers of the evening. It is rather unfortunate that the banquet was held on the evening devoted to the first session of the National Society for the Study of Education. The latter organization is the older and may justly be accorded precedence in a conflict of this type.

The Tuesday and Thursday sessions of the college teachers were given over to the discussion of the monograph prepared by Superintendent Spaulding of Newton, Massachusetts, "The Aim, Scope, and Methods of a University Course in Public School Administration." (This paper and the accompanying discussions will be reviewed in an early number of the JOURNAL.) Although the published paper had been in the hands of the members for several days, a large part of it was read at the first session by the author. When this reading was completed, the speaker attempted to answer the criticisms to which his paper had been subjected by Burris of Cincinnati and Elliott of Wisconsin,—especially by the former. Unfortunately this phase of the discussion became personal, and, together with Burris's rejoinder, gave one the impression of a petty type of acrimonious debate which seemed quite out of harmony both with the purpose of the Society and with the serious import of the subject under consideration.

The general discussion that followed this unfortunate incident was opened by De Garmo of Cornell who asked for light upon the important question, What are the fundamental sciences that should underlie a course in school administration? This question furnished a point of departure for the subsequent speakers. Johnston of Michigan joined with Burris in advocating an ethical basis. Deahl of West Virginia indorsed Spaulding's contention that the principle of universal education formed

an adequate basis. Suzzallo maintained that the school must deal with the individual pupil on the one hand, and, on the other hand must adjust itself to social conditions. It is the latter phase of the school's function that becomes the unique field of school administration and for this reason the sciences that are fundamental to school administration are sociology and political science. Yocum of Pennsylvania, Buchner of Johns Hopkins, Withers of St. Louis, and Butler of Chicago also participated in the discussion on Tuesday.

Thursday's meeting opened with the business session. Judd of Chicago was elected chairman for the ensuing year, and Holland of Indiana, secretary. The Society has hitherto printed its own proceedings, but an arrangement will be made with the University of Chicago Press for the publication of future volumes. The excellent financial condition of the Society is due entirely to the efforts of the retiring secretary-treasurer, Bolton of Iowa; and this fact was fittingly recognized by a vote of the Society.

The discussions of this session were opened by Hollister of Illinois, who emphasized the necessity for a sharp distinction between administration and supervision. Rankin of Minnesota contended that the problems of teaching administration in the state universities were somewhat different from the problems in the large endowed universities because of the more intimate relations which the former institutions sustain to the public-school system. Strayer of Columbia, Foster of Kansas, Meriam of Missouri, and Sutton of Texas continued the discussion, which was brought to a close by the chairman.

It is difficult to state the net results of this meeting,—still more difficult to evaluate them. Perhaps one noted most frequently the lack of definiteness in the discussions. If a meeting of this sort is to be valuable to those who attend and participate, it must concern itself, in part at least, with an interchange of experience. What one does to solve the problems,—the actual adjustments that one makes,—these are vastly more interesting and helpful than a discussion of one's philosophical bias. This is not to say that one's philosophical bias is unimportant: on the contrary, it is fundamental—to one's self. And, in order that we may know a speaker's fundamental attitude, some reference to basic principles is both inevitable and appropriate. But, after all, where help can be given most effectively and abundantly is in a much narrower sphere. Men who have reached the age of the average college teacher of education have their philosophical and ethical theories pretty thoroughly crystallized, and two three-hour sessions are not likely signifi-

cantly to modify these systems. But the mere hint of a practical method of approach, the suggestion of an effective scheme for organizing one's materials, the description of ways in which students may become interested in what we have to teach, or be led to see the significance of our work:—these are the results of this annual interchange of experience which will be of the greatest service. True, the outsider may consider these matters trivial and unimportant; but that does not matter much.

W. C. B.

NOTES AND NEWS

At the annual meeting of the American Psychological Association which was held in Boston, December 20 to 31, Prof. W. B. Pillsbury of the University of Michigan was elected President, and Prof. A. H. Pierce of Smith College was reëlected Secretary and Treasurer. The next meeting of the Association will be held in Minneapolis in conjunction with the American Association for the Advancement of Science. For the convenience of those who are unable to attend this meeting it is proposed to hold a section meeting in connection with the meeting of the American Philosophical Association at Princeton.

At the fifth annual meeting of the Southern Society for Philosophy and Psychology, held at Charlotte, N. C., December 28, 1909, the following officers for the year were elected: *President,* Edward Franklin Buchner, Johns Hopkins University; *Vice-President,* Shepherd Ivory Franz, George Washington University; *Secretary-treasurer,* Robert Morris Ogden, University of Tennessee. A. Caswell Ellis, University of Texas, and David Spence Hill, Peabody College for Teachers were elected members of the council to serve two years, and Bruce R. Payne, University of Virginia, and Haywood J. Pearce, Brenau College, to serve three years.

The fourth Congress for Experimental Psychology will meet at Innsbruch on April 19, 1910.

At the request of the Belgian government Dr. Elmer Ellsworth Brown, United States Commissioner of Education, has appointed the following committee to have charge of American interests at the Third International Congress of Home Education, Brussels, 1910: Prof. M. V. O'Shea, University of Wisconsin, Chairman: Prof. W. C. Bagley, University of Illinois, Secretary; President Wm. L. Bryan, University of Indiana; Mr. Wm. H. Allen, Expert for the Sage Foundation, New York; Prof. Irving Fisher, Yale University, Chairman of the Committee of One Hundred; Judge Ben B. Lindsey, Denver; Dr. D. P. MacMillan, Child-Study Expert, Board of Education, Chicago; Superintendent Frank B.

Cooper, Seattle; Mary E. Ahern, Editor Public Libraries, Chicago; President E. B. Johnstone, Vineland, N. J.; Lewis H. Jones, State Normal College, Ypsilanti, Mich.; Charlotte Perkins Gilman, Editor, New York; Mrs. H. K. Schoff, President of the National Congress of Mothers, Philadelphia; Dean W. S. Sutton, University of Texas; Prof. Henry Suzzalo, Columbia University; Bertha Payne Miller, University of Chicago.

The council of the American Physical Education Association, at its annual meeting in Philadelphia, January 1, elected the following officers: *President,* Dr. George L. Meylan, Columbia University; *Secretary-Editor-Treasurer,* Dr. J. H. McCurdy, International Y. M. C. A. Training School, Springfield, Mass.

According to *Science* a joint committee of the Mathematical Association, London, and the Association of Public School Science Masters has been considering the possibility of correlating the teaching of mathematics and science, and has prepared a report on the subject.

Dr. Edmund Clark Sanford was installed as President of Clark College on February 1.

On Thursday, February 3, Prof. Roswell P. Angier of the Yale Psychological Laboratory delivered a lecture before the Columbia Psychological Club on "Freud's Interpretation of Dreams."

On January 11 Dr. E. L. Thorndike, professor of educational psychology in Teachers College, Columbia University, gave an address before the Middletown Scientific Association on "Experimental Studies in Animal Intelligence."—*Science.*

We read in *Science* that Dr. Karl Groos, professor of philosophy and pedagogy at Giessen, well known for his works on the "Play of Animals," and the "Play of Man," as well as for his more recent book, *Das Seelenleben des Kindes,* has resigned his chair at the university.

The branch secretaries of the (English) Child Study Society are distributing in London and in other large centers a schedule prepared by Prof. Karl Pearson, F. R. S., for studying the factors influencing the social life of the child, which it is desired shall be filled in by heads of

families or by teachers intimate with families. As an appeal is made to secure an adequate number of returns, we assume that American readers who are interested may obtain blanks by applying to the Secretary of the Child Study Society, 90 Buckingham Palace Road, London S. W.

We learn from the *Educational Times* (London) that at the opening of the new Carnegie Physics Laboratory at University College, Dundee, Sir J. J. Thomson surprised some of his hearers with this paradoxical assertion. "It may seem a strange thing to say, but I think that, for educational purposes, a bad teacher is better than a good one." Your good teacher, he argued, is too clear; your admirable text-book leaves no difficulties to puzzle over. So the student does not reap the old intellectual training of puzzlement. If this statement be interpreted literally, we are inclined to feel, with the *Times*, that "there are risks in paradoxical expression." It is unusual, to say the least, to endorse formal discipline in this guise.

Dr. E. C. Moore, of our board of collaborators, has resigned the superintendency of schools at Los Angeles to accept the newly established professorship of education at Yale University.

Mr. J. O. Engleman has been placed in charge of the department of psychology and education in the newly established state normal school at La Crosse Wis. Mr. Engleman was formerly principal of the training school of the Indiana State Normal School.

Mr. W. H. Sanders, formerly superintendent of the city schools of Bloomington, Ind., is in charge of the training department in the La Crosse Normal School.

Mr. Daniél Starch is conducting the courses in educational psychology in the University of Wisconsin this year. Professor W. F. Dearborn, formerly in charge of these courses, is now in the School of Education at the University of Chicago.

Prof. E. B. Titchener has been appointed research professor in the reorganized Graduate School of Cornell University. Professor Titchener will henceforth give no instruction to undergraduates, but will confine his attention entirely to research work.

Dr. A. H. Sutherland, formerly assistant to Dr. S. I. Franz of the Government Hospital for the Insane, Washington, D. C., has been appointed instructor in psychology in the University of Illinois.

It is announced in *Science* that Professor Jacques Loeb, of the University of California, known to readers of this Journal for his work in comparative psychology, has been appointed head of a newly organized department of experimental biology in the Rockefeller Institute for Medical Research. Professor Loeb will take up his duties at the Institute next autumn.

Dr. Shepherd Ivory Franz, psychologist at the Government Hospital for the Insane, Washington, D. C., has been appointed scientific director of that institution.—*Science.*

The teachers of educational psychology in New York State will meet at Ithaca, April 8th and 9th, at the invitation of the Educational Department of Cornell University, to discuss problems arising in the teaching of this subject, and to effect permanent organization.

The Western Philosophical Association and the North Central Branch of the American Psychological Association will meet at the University of Iowa, March 25th and 26th. The two associations will run separate programs, except for one or two joint sessions. These meetings will be preceded by a session of the association of the teachers of psychology in Iowa.

PUBLICATIONS RECEIVED TO FEBRUARY 1, 1910

Bibliography of Education for 1908-1909. Washington: Government Printing Office, 1909. Pp. 134

ALFRED BINET. *Les idées modernes sur les enfants.* Paris: Flammarion, 1909. Fr. 3.50.

PAUL CARUS. *Philosophy as a Science.* Chicago: The Open Court Publishing Company,1909. Pp. xi, 213.

CLASS OF 1910, Fitchburg Normal School. *Memory.* Fitchburg: Published by the Class, 1910. Pp. 28.

T. D. CROTHERS. (Editor). *Some Scientific Conclusions concerning the Alcoholic Problem and its Practical Relations to Life.* Senate Document No. 28, Sixty-first Congress. Washington: Government Printing Office, 1909. Pp. 179.

J. SHIRLY EATON. *Education for Efficiency in Railroad Service.* Washington: Government Printing Office, 1909. Pp. 159.

HENRY FISCHER. *Psychology for Music Teachers.* London: J. Curwen & Sons, 1905. 3s.

E. GAUPP. *Uber die Rechtshändkeit des Menschen.* Jena: G. Fischer, 1909. Pp. 36. M. 1.

H. A. HOLLISTER. *High School Adminstration.* Boston: D. C. Heath and Company, 1909. Pp. xi, 379.

HEINRICH KIELHORN. *Erziehung und Unterricht schwachbefähigter Kinder.* Halle: Carl Marhold, 1909. Pp, 114. M. 2.

WILHELM OSTWALD. *Wider das Schulelend. Ein Notruf.* Leipzig: Akademische Verlagsgesellschaft, 1909. Pp. 48. M. 1.

ALFRED E. SHIPLEY, M. D. *Preventive and Constructive Medicine, with Special Reference to Medical School Inspection.* Reprinted from the Long Island Medical Journal, December, 1909. Pp. 8.

Statistics of State Universities, etc. Washington: Government Printing Office, 1909. Pp. 15 .

W. F. SUTHERLAND. *The Teaching of Geography.* Chicago: Scott, Forseman & Company, 1909. Pp. 295.

E. B. TITCHENER. *Lectures on the Experimental Psychology of the Thought Processes.* New York: The Macmillan Company, 1909. Pp. 318. $1.25 net.

J. E. WALLACE WALLIN. *Medical and Psychological Inspection of School Children.* Reprinted from The Western Journal of Education, 2: December, 1909, 433-446.

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CONTENTS

VOL. I, NO. 3. MARCH, 1910

FLOYD CARLTON DOCKERAY: *The Span of Vision in Reading and the Legibility of Letters* 123

MARY SUTTON MACY: *The Sub-normal Child in New York City Schools* 132

JOHN FRANKLIN BROWN: *The Courses in Education in German Universities* 145

W. VAN DYKE BINGHAM: *Educational Psychology at the Boston Meeting of the American Association for the Advancement of Science* 159

COMMUNICATIONS AND DISCUSSIONS

The Doctrine of Formal Discipline. J. F. Wallace Wallin .. 168

The Organization of the Department of Education at the University of Vermont. J. F. Messenger 171

The Indianapolis Meeting of the Department of Superintendence, March 1-3, 1910. W. C. B. 173

NOTES AND NEWS 178

PUBLICATIONS RECEIVED 180

Manuscripts for publication, books or other material for review, and news items of interest to educational psychologists should be addressed to The Managing Editor, J. Carleton Bell, 1032 Sterling Place, Brooklyn, N. Y. Research contributions from England may be sent to W. H. Winch, Esq., Melville Villa, Overhill Road, Dulwich, London.

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